

## CLAIMS

What is claimed is:

1. An isolated and purified DNA sequence substantially similar to the DNA sequence shown in SEQ ID 1 or 4.
- 5 2. An isolated and purified DNA sequence that hybridizes to the DNA sequence shown in SEQ ID 1 or 4 under high stringency hybridization conditions.
3. An isolated and purified DNA sequence that consists essentially of the DNA sequence shown in SEQ ID 1 or 4.
- 10 4. A recombinant DNA molecule comprising the isolated and purified DNA sequence of Claim 1, 2, or 3 subcloned into an extra-chromosomal vector.
5. A recombinant host cell comprising a host cell transfected with the recombinant DNA molecule of Claim 4.
- 15 6. A substantially purified recombinant polypeptide, wherein the amino acid sequence of the substantially purified recombinant polypeptide is substantially similar to the amino acid sequence shown in SEQ ID 2 or 5.
7. A substantially purified recombinant polypeptide, wherein the amino acid sequence of the substantially purified recombinant polypeptide consists essentially of the amino acid sequence shown in SEQ ID 2 or 5.
- 20 8. An antibody that selectively binds polypeptides with an amino acid sequence substantially similar to the amino acid sequence of Claim 6.
9. A method of detecting a SYNIP in cells, comprising contacting cells with the antibody of Claim 8 and incubating the cells in a manner that allows for detection of the SYNIP-antibody complex.

10. A diagnostic assay for detecting cells containing SYNIP mutations, comprising isolating total genomic DNA from the cell and subjecting the genomic DNA to PCR amplification using primers derived from the isolated and purified DNA sequence of Claim 1, 2, or 3 and determining whether the resulting PCR product contains a mutation.
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11. A diagnostic assay for detecting cells containing SYNIP mutations, comprising isolating total cell RNA, subjecting the RNA to reverse transcription-PCR amplification using primers derived from the isolated and purified DNA sequence of Claim 1, 2, or 3 and determining whether the resulting PCR product contains a mutation.
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12. A diagnostic assay for detecting or screening of therapeutic compounds that interfere with the interaction between SYNIP and syntaxin-4 or other ligands that bind to SYNIP, comprising the step of measuring the interaction between SYNIP and syntax-4 or other ligands that bind to SYNIP, while in the presence of at least one other therapeutic compound.
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13. A diagnostic assay for the discovery of proteins that interact directly or indirectly with SYNIP, comprising the step of detecting the interaction of SYNIP or cDNA encoding SYNIP with proteins in mammalian cells.
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14. A method of isolating RNA containing stretches of polyA or polyC residues, comprising:
- (a) contacting an RNA sample with SYNIP in RNA binding buffer in the presence of a reducing agent;
  - (b) incubating the RNA-SYNIP mixture with the antibody of Claim 8;
  - (c) isolating the antibody-SYNIP-RNA complexes; and
  - (d) purifying the RNA away from the antibody-SYNIP complex.
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15. A method of isolating RNA containing stretches of polyU residues, comprising:

- 5 (a) contacting an RNA sample with SYNIP in RNA binding buffer in the absence of reducing agents;
- (b) incubating the RNA-SYNIP mixture with the antibody of Claim 8;
- (c) isolating the antibody-SYNIP-RNA complexes; and
- 10 (d) purifying the RNA away from the antibody-SYNIP complex.
16. A method for purifying SYNIP from bacterial cells comprising:
- (a) transfecting a bacterial host cell with a vector comprising the isolated and purified DNA sequence of Claim 1, 2, or 3 operatively linked to a promoter capable of directing gene expression in a bacterial host cell;
- 15 (b) inducing expression of the isolated and purified DNA sequence in the bacterial cells;
- (c) lysing the bacterial cells;
- (d) isolating bacterial inclusion bodies;
- (e) purifying SYNIP protein from the isolated inclusion bodies.
17. A method of isolating RNA containing stretches of polyU residues, comprising:
- (a) contacting an RNA sample with SYNIP in RNA binding buffer in the absence of reducing agents;
- 20 (b) incubating the RNA-SYNIP mixture with the antibody of Claim 8;
- (c) isolating the antibody-SYNIP-RNA complexes; and
- (d) purifying the RNA away from the antibody-SYNIP complex.
18. A method for protecting mammalian cells from glucose utilization or storage disorders, comprising introducing into mammalian cells an expression vector comprising the isolated and purified DNA sequence of Claim 1, 2, or 3, which is operatively linked to a DNA sequence that promotes the high level expression of the isolated and purified DNA sequence in mammalian cells.
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19. A method for treating or preventing insulin resistance, comprising introducing into a mammal an expression vector comprising the isolated and purified DNA sequence of Claim 1, 2, or 3, which is operatively linked to a DNA sequence that promotes the high level expression of the antisense strand of the isolated and purified DNA sequence in mammalian cells.
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20. A method for purifying SYNIP from bacterial cells comprising:
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- (a) transfecting a bacterial host cell with a vector comprising the isolated and purified DNA sequence of Claim 1, 2, or 3 operatively linked to a promoter capable of directing gene expression in a bacterial host cell;
  - (b) inducing expression of the isolated and purified DNA sequence in the bacterial cells;
  - (c) lysing the bacterial cells;
  - 15 (d) isolating bacterial inclusion bodies;
  - (e) purifying SYNIP protein from the isolated inclusion bodies.